

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

36. (Canceled) A melt-infiltrated fibre-reinforced composite ceramic comprising high-temperature-resistant fibres reaction-bonded to a matrix comprising silicon and iron.

37. (Canceled) The melt-infiltrated fibre-reinforced composite ceramic of Claim 36, wherein the high-temperature-resistant fibres comprise Si/C/B/N.

38. (Canceled) The composite ceramic of Claim 36, further comprising at least one element selected from the group consisting of chromium, titanium, aluminium, nickel and molybdenum as passive layer formers.

39. (Canceled) The composite ceramic of Claim 36, wherein the matrix contains from 0.5 to 80% by weight of iron.

40. (Canceled) The composite ceramic of Claim 39, wherein the matrix contains from 5 to 50% by weight of iron.

41. (Canceled) The composite ceramic of Claim 38, wherein the silicon alloy contains from 0.03 to 40% by weight of chromium.

42. (Canceled) The composite ceramic of Claim 41, wherein the matrix contains from 1 to 40% by weight of chromium.

43. (Canceled) The composite ceramic of Claim 42, wherein the matrix contains from 1 to 10% by weight of chromium.

44. (Canceled) The composite ceramic of Claim 36, wherein the fibres are C fibres or SiC fibres.

45. (Canceled) The composite ceramic of Claim 36, wherein the fibres are collected together to form fibre bundles and are surface-impregnated with pitch.

46. (Canceled) The composite ceramic of Claim 45, wherein the fibres bundles are short-fibre bundles.

47. (Canceled) The composite ceramic of Claim 46, wherein the fibres comprise C filaments having mean diameters of from about 5 to 12 μm and a length of from about 2 to 10 mm and the fibre bundles contain from about 3000 to 14,000 filaments.

48. (Previously Presented) A process for producing a fibre-reinforced composite ceramic comprising high-temperature-resistant fibres reaction-bonded to a matrix, comprising the following steps:

producing a green body from fibres, binders and fillers by at least one step selected from the group consisting of winding, lamination, pressing, and hot flow molding;

pyrolysing the green body under reduced pressure or protective gas in a temperature range from about 800°C to 1200°C to produce a porous shaped body; and

infiltrating the porous shaped body with a silicon melt which comprises silicon and iron.

49. (Previously Presented) The process of Claim 48, wherein the high-temperature-resistant fibres comprise Si/C/B/N.

50. (Previously Presented) The process of Claim 48, wherein the silicon melt further comprises chromium, titanium, aluminium, nickel or molybdenum or a combination of chromium with titanium, aluminium, nickel or molybdenum as passive layer formers.

51. (Previously Presented) The process of Claim 48, wherein the silicon melt contains from 0.5 to 80% by weight of iron.

52. (Previously Presented) The process of Claim 50, wherein the silicon melt contains from 0.5 to 80% by weight of iron.

53. (Previously Presented) The process of Claim 51, wherein the silicon melt contains from 5 to 50% by weight of iron.

54. (Previously Presented) The process of Claim 52, wherein the silicon melt contains from 5 to 50% by weight of iron.

55. (Previously Presented) The process of Claim 54, wherein the silicon melt contains from 0.03 to 40% by weight of chromium.

56. (Previously Presented) The process of Claim 55, wherein the silicon melt contains from 1 to 40% by weight of chromium.

57. (Previously Presented) The process of Claim 56, wherein the silicon melt contains from 1 to 10% by weight of chromium.

58. (Previously Presented) The process according of Claim 51, wherein the fibres used are C fibres or SiC fibres.

59. (Previously Presented) The process of Claim 51, wherein the fibres are collected together to form fibre bundles and are surface-impregnated with pitch.

60. (Previously Presented) The process of Claim 59, wherein the fibres bundles are short-fibre bundles.

61. (Previously Presented) The process of Claim 60, wherein the fibre bundles used are formed by from about 3000 to 14,000 C filaments having mean diameters of from about 5 to 10 μm and a length of from about 2 to 10 mm.

62. (Previously Presented) The process of Claim 60, wherein the green body is produced by:

forming a granulated material from the fibres, binders, and fillers and;
dry pressing or hot flow molding of the granulated material.

63. (Previously Presented) The process of Claim 61, wherein the green body is produced by:

forming a granulated material from the fibres, binders, and fillers and;
dry pressing or hot flow molding of the granulated material.

64. (Previously Presented) The process of Claim 62, wherein the granulated material is produced by pan granulation.

65. (Previously Presented) The process of Claim 63, wherein the granulated material is produced by pan granulation.

66. (Previously Presented) The process of Claim 64, in which the granulated material is produced continuously or batchwise and has a mean particle size of from about 2 to 6 mm.

67. (Previously Presented) The process of Claim 65, in which the granulated material is produced continuously or batchwise and has a mean particle size of from about 2 to 6 mm.

68. (Previously Presented) The process of Claim 48, wherein carbon-containing fillers are added in the production of green body.

69. (Previously Presented) The process of Claim 68, wherein the carbon-containing fillers comprise carbon black or graphite.

70. (Previously Presented) The process of Claim 48, wherein the fillers in the form of silicides are added in the production of the green body.

71. (Previously Presented) The process of Claim 64, wherein a dry mixture of short-fibre bundles and fillers is first premixed and is subsequently mixed with binders in a pelletizing pan to produce the granulated material.

72. (Previously Presented) The process of Claim 65, wherein a dry mixture of short-fibre bundles and fillers is first premixed and is subsequently mixed with binders in a pelletizing pan to produce the granulated material.

73. (Previously Presented) The process of Claim 69, wherein the granulated material is produced from about 20-60% by weight of SiC powder, about 2-20% by weight of carbon in the form of graphite powder or carbon black,

about 10-40% by weight of C fibre bundles (12K bundles) and about 15-40% by weight of a binder solution, with the latter being sprayed into a pelletizing pan.

74. (Previously Presented) The process of Claim 72, wherein the granulated material is produced from about 20-60% by weight of SiC powder, about 2-20% by weight of carbon in the form of graphite powder or carbon black, about 10-40% by weight of C fibre bundles (12K bundles) and about 15-40% by weight of a binder solution, with the latter being sprayed into a pelletizing pan.

75. (Previously Presented) The process of Claim 73, wherein the binder solution is an aqueous binder solution containing from 0.01 to 10% by weight of methylcellulose esters and polyvinyl alcohol.

76. (Previously Presented) The process of Claim 74, wherein the binder solution is an aqueous binder solution containing from 0.01 to 10% by weight of methylcellulose esters and polyvinyl alcohol.

77. (Previously Presented) The process of Claim 64, wherein the granulated material is dried after it has been produced and is subsequently pressed to form the green body.

78. (Previously Presented) The process of Claim 65, wherein the granulated material is dried after it has been produced and is subsequently pressed to form the green body.

79. (Previously Presented) The process of Claim 48, wherein the green body is heated to from about 950 to 1050°C under a nitrogen atmosphere in a pyrolysis furnace to produce the porous shaped body.

80. (Previously Presented) The process of Claim 48, wherein the green body is converted in the pyrolysis into a shaped body having a porosity of from about 30 to 50%.

81. (Previously Presented) The process of Claim 48, wherein the porous shaped body is infiltrated with a silicon melt containing from about 10 to 50% by weight of iron with the balance being silicon.

82. (Previously Presented) The process of Claim 50, wherein the porous shaped body is infiltrated with a silicon melt containing from about 10 to 50% by weight of iron, from 0.5 to 10% by weight of chromium and silicon as the balance.